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Report Number

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**IBM PC/IX OPERATING SYSTEM
EVALUATION PLAN**

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November 28, 1984

IBM PC/IX OPERATING SYSTEM EVALUATION PLAN

ABSTRACT

This document contains an evaluation plan for the IBM PC/IX Operating System designed for IBM PC/XT computers. The evaluation plan covers the areas of performance measurement and evaluation, software facilities available, man-machine interface considerations, networking, and suitability of PC/IX as a development environment within the USL NASA PC/R&D project. In order to compare and evaluate the PC/IX system, comparisons with other UNIX*-based systems available are also included.

* UNIX is a trademark of Bell Laboratories.

TABLE OF CONTENTS

1.0	PURPOSE	4
2.0	PERSONEL REQUIREMENTS	5
3.0	HARDWARE/SOFTWARE REQUIREMENTS	5
4.0	EVALUATION PLAN OVERVIEW	6
5.0	TIME FRAME	9

IBM PC/IX OPERATING SYSTEM EVALUATION PLAN

1.0 PURPOSE

The evaluation of the PC/IX operating system for the IBM personal computer will be performed in order to determine the suitability of such a high-end operating system within PC/R&D as well as production environments. In particular, in light of the interest of NASA in low-end and high-end UNIX-based workstation systems, this evaluation will attempt to determine the usability of such a software product for our own PC/R&D environment.

Other aspects of the evaluation will be the human aspects of interacting with a "full-scale" operating system, i.e., user-machine interfacing, problems with slower response time, increased complexity, etc. Finally, an attempt will be made to "place" PC/IX within the framework of other UNIX systems, in particular the ones available at USL. Such UNIX systems include the VAX-11/780 BSD 4.2 UNIX, and the AT&T Version 5 Unix on the Pyramid 90x systems. Also, literature research can help compare PX/IX with other micro-based UNIX systems, i.e., VENIX-86, XENIX, UN*X, etc. Again, this phase of the evaluation will be performed from the viewpoint of the USL NASA PC/R&D project goals.

2.0 PERSONNEL REQUIREMENTS

The 10/25/84 meeting of the USL NASA PC R&D team, as well as individual discussions between team members, actual system use, the evolution of the evaluation plan (Section 4), and previous evaluation experience, have dictated that 3 Research Assistants to work on the project. The team members to be primarily involved with the evaluation will be Philip Hall, Spiros Triantafyllopoulos, and Martin Granier. Philip Hall's main duties will include user interface evaluation, suitability of use for PC R&D environments, and user-end related evaluation in general. Spiros Triantafyllopoulos' primary duties will include software evaluation, software/hardware configurations, software tools available, and general comparison against other UNIX versions. Martin Granier's responsibilities will include the literature overview, and the relationship of PC/IX to the USL NASA PC R&D and educational activities. These duties will be shifted if the circumstances require so, in order to produce an accurate evaluation. Also, assistance from other team members will be requested, if needed.

3.0 HARDWARE/SOFTWARE REQUIREMENTS

The PC/IX evaluation will require a fully equipped PC/XT for the period of the evaluation, with one printer attached and the appropriate paper and floppies supplies. Software needed, except

PC/IX itself, will be the various tools available on the PC-DOS environment for comparison (i.e., a C compiler, MASM-86 assembler, etc.) Additional hardware/software to be used, if possible, will include the UUCP interface, one EtherNet Board, and other communications support software. For evaluation of a UUCP-based network, a second PC/IX may be required for a short (1-2 days) period, with a notice well in advance. Finally, the USL VAX-11/780 and Pyramid 90x will be our additional "guinea pigs". Pyramid accounts will have to be requested.

4.0 EVALUATION PLAN OVERVIEW

The evaluation will be divided in the following 8 sections. The evaluation comparisons will revolve around the areas of:

- PC/IX vs. PC-DOS.
- PC/IX vs. other full-size and micro UNIX systems.
- PC/IX in the USL NASA PC R&D environment.

The evaluation plan is as follows:

4.1 Literature Overview

- What others said about it
- Other references on PME
- Attempt to define a UNIX public view, i.e., how other people see UNIX.

4.2 Operating System Performance Measurement and Evaluation

- Facilities available

- User interfacing
- Man/machine cooperation

4.3 System Completeness

- What the system has (compared to Unix V & BSD 4.2).
- What the system does not have.
- User's view of completeness.
- User expectations fulfillment.
- What can be used to make it more complete
- What is available to make it more complete
- How is the market oriented towards add-ons
- Special hardware/software support (i.e., PC-DOS)

4.4 System Compatibility

- Compatibility with DOS 3.0, 3.1.
- Local Area Network support
- Other UNIX-based systems
- Software Compatibility
- User's view of compatibility (i.e., same commands?).

4.5 Programming Language PME

- C language
- MASM-86 assembler
- Snobol (possibly versus Multics Snobol)
- Evaluation between different UNIX versions
and/or implementations
- Other language-oriented tools (i.e., yacc, lex, awk)

4.6 UUCP Network Evaluation.

- How can we use it?.
- Comparison with other networks.
- Configurations possible.
- To what can we connect it?
- There is interest from the CMPS Department and the Computer Center for UUCP-based networks. How can PC/IX UUCP be used with UUCP in a campus-network? What are the pros and cons associated with PC/IX UUCP?

4.7 USL NASA/RECON Project - PC/IX Roles.

- Operating Systems
 - User interfaces to DBMS, IS&R, etc.
 - Compatibility (for our own goals).
 - Transportability
 - Standarization
 - Complexity
 - Available hardware/software support
 - Compatibility with the Multics-based DBMS environment
- Relevance to the USL NASA PC R&D Objectives
 - As seen in the HICSS-18 PC R&D paper, & PC R&D WPS
 - 4, 5, 6 and 8
 - What do we need from PC/IX??
 - How PC/IX can satisfy these requirements?

- How well can PC/IX satisfy them?

4.8 Conclusions

In the final report, as well as during the evaluation process, no attempt will be made to decide upon specific software or hardware configurations. Facts reporting will be much more critical, along with a concise format for their presentation, in order to give a fairly complete idea of what PC/IX is and what it can do.

5.0 TIME FRAME

The estimated time of completion of the project is the end of the year, December 31, 1984 (rather optimistic), or prior to commencing of next semester, January 15, 1984. As soon as the final details are known, an evaluation schedule will be produced with dates/parties and status reports, as needed.

The evaluation personel have arrived at these dates after consideration of the complexity of the tasks to be performed, and also in consideration of other time-critical activities that are to be performed in parallel by the USL NASA PC/R&D group.

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